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(54) DATA PROCESSING METHOD AND ITS DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To strengthen resistance against a packet loss and a data error without unnecessarily increasing a transmission quantity by repeatedly storing at least one data section of a low priority order and the same data section of a high priority order, which are coordinated, in the same packet at least once or making the data section of the high priority a packet so as to repeatedly transmit/record at least once.

SOLUTION: The unit of a data section can be the frame unit of video or voice, the GOB unit and MB unit of video, the sound section and the silence section of voice. For example, the importance of a data section (a) is high and stored in the same packet as

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data sections (b) to (d). At the time of storing at least two data sections in the same packet, information concerning at least one of the priority order, the frame type and the data kind of a housed data section is described at the leading part of the packet and transmit-recorded to accelerate the content decision of the stored data section.

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CLAIMS

[Claim(s)]

[Claim 1] The data-processing approach which repeats matching, said one or more data partitions with a low priority, and said same data partition with a high priority for the priority showing the sequence of processing in the data partition of time series data, once or more, makes a packet storing or said data partition with a high priority at the same packet, and is repeatedly characterized by transmission and the thing to record once or more.

[Claim 2] The data processor which repeats matching, said one or more data partitions with a low priority, and said same data partition with a high priority for the priority showing the sequence of processing in the data partition of time series data, once or more, makes a packet storing or said data partition with a high priority at the same packet, and is repeatedly characterized by transmission and the thing to record once or more.

[Claim 3] The data-processing approach which repeats matching, said one or

more data streams with a low priority, and said same data stream with a high priority for the priority showing the sequence of processing to the data stream of time series data, once or more, makes a packet storing or said data stream with a high priority at the same packet, and is repeatedly characterized by transmission and the thing to record once or more.

[Claim 4] The data processor which repeats matching, said one or more data streams with a low priority, and said same data stream with a high priority for the priority showing the sequence of processing to the data stream of time series data, once or more, makes a packet storing or said data stream with a high priority at the same packet, and is repeatedly characterized by transmission and the thing to record once or more.

[Claim 5] The data-processing approach which makes a packet the data partition encoded in storing or the same frame in the same packet in the data partition encoded in the frame by one or more data partitions of time series data by which interframe coding was carried out, and is repeatedly characterized by what is transmitted and recorded once or more.

[Claim 6] The data processor which makes a packet the data partition encoded in storing or the same frame in the same packet in the data partition encoded in

the frame by one or more data partitions of time series data by which interframe coding was carried out, and is repeatedly characterized by what is transmitted and recorded once or more.

[Claim 7] The data-processing approach that said data partition to which its attention paid is repeatedly characterized by to transmit and record the count transmitted and recorded or the information about existence as a packet or control information in case it carries out [at a packet] storing or said data partition to which its attention was paid to the same packet and records [transmit and] repeatedly with one or more data partitions which are different in the data partition to which its attention was paid.

[Claim 8] The data processor with which said data partition to which its attention paid is repeatedly characterized by to transmit and record the count transmitted and recorded or the information about existence as a packet or control information in case it carries out [at a packet] storing or said data partition to which its attention was paid to the same packet and records [transmit and] repeatedly with one or more data partitions which are different in the data partition to which its attention was paid.

[Claim 9] The data-processing approach that said data stream to which its

attention was paid is repeatedly characterized by transmitting and recording the count transmitted and recorded or the information about existence as a packet or control information in case it makes [at a packet] the same packet storing or said data stream to which its attention was paid and records [transmit and] repeatedly with one or more data streams which are different in the data stream to which its attention was paid.

[Claim 10] The data processor with which said data stream to which its attention was paid is repeatedly characterized by transmitting and recording the count transmitted and recorded or the information about existence as a packet or control information in case it makes [at a packet] the same packet storing or said data stream to which its attention was paid and records [transmit and] repeatedly with one or more data streams which are different in the data stream to which its attention was paid.

[Claim 11] The data-processing approach characterized by describing all the information about either on the priority of said data partition stored, a frame type, and data classification into the head part of said packet, and transmitting and recording it at least in case two or more data partitions are stored in the same packet.

[Claim 12] The data processor characterized by describing all the information about either on the priority of said data partition stored, a frame type, and data classification into the head part of said packet, and transmitting and recording it at least in case two or more data partitions are stored in the same packet.

[Claim 13] The data-processing approach characterized by calculating the priority showing the sequence of processing in a data partition between said two or more data partitions according to matching and a priority, and transmitting the result of an operation to it.

[Claim 14] The data processor characterized by calculating the priority showing the sequence of processing in a data partition between said two or more data partitions according to matching and a priority, and transmitting the result of an operation to it.

[Claim 15] The data-processing approach characterized by to change the operation approach of error detection or an error correcting code at least according to the classification of the data contained in said transmission packet before an operation in case the operation of error detection or a correction sign is performed at least, 0 bytes or more or 1 bytes or more of new transmission header is added to the head of said transmission packet to the information

included in a transmission packet and the result of an operation of error detection or a correction sign is transmitted at least.

[Claim 16] The data processor characterized by changing the operation approach of error detection or an error correcting code at least according to the classification of the data contained in said transmission packet before an operation in case the operation of error detection or a correction sign is performed at least, 0 bytes or more or 1 bytes or more of new transmission header is added to the head of said transmission packet to the information included in a transmission packet and the result of an operation of error detection or a correction sign is transmitted at least.

[Claim 17] The data-processing approach characterized by preparing the identifier for identifying the operation approach of error detection or an error correcting code at least in a transmission header in case the operation of error detection or a correction sign is performed at least and the result of an operation of error detection or a correction sign is transmitted at least to the information included in a transmission packet.

[Claim 18] The data processor characterized by preparing the identifier for identifying the operation approach of error detection or an error correcting code

at least in a transmission header in case the operation of error detection or a correction sign is performed at least and the result of an operation of error detection or a correction sign is transmitted at least to the information included in a transmission packet.

[Claim 19] It is the data-processing approach according to claim 15 characterized by performing the judgment of data classification by the existence or data classification of the transmission header of RTP in said transmission packet (RealtimeTransport Protocol), or the transmission header defined beforehand.

[Claim 20] It is the data processor according to claim 16 characterized by performing the judgment of data classification by the existence or data classification of the transmission header of RTP in said transmission packet (RealtimeTransport Protocol), or the transmission header defined beforehand.

[Claim 21] The data-processing approach characterized by changing the method of error detection or an error correction according to said priority according to the priority to which it was made to correspond for every frame of an image.

[Claim 22] The data processor characterized by changing the method of error

detection or an error correction according to said priority according to the priority to which it was made to correspond for every frame of an image.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the data-processing approach and data processor which raise the resistance of an image, voice, the transmission-line error of data, and a record-medium error.

[0002]

[Description of the Prior Art] Since a regenerative signal becomes the error of a cutting tool unit from the former in the record fields, such as CD, the Reed Solomon code which is an error correcting code of a cutting tool unit is used widely. Moreover, in the communication link field, since the error in a transmission line occurs at random, the BCH code and convolutional code which are a random correction sign are used. On the other hand, broadcast, especially a ground broadcast way have various active jamming, and it is inferior as a digital transmission way.

[0003] Thus, these problems have been solved from the former by error detection, the correction sign, and resending to the transmission-line error of an image or voice, and a record-medium error. However, although error detection and correction capacity are strengthened by using error detection and a correction sign, the processing time starts. Moreover, when resending, in the

communication link situation that a propagation delay is large, delay by resending cannot be disregarded like wireless.

[0004] As a conventional example, by satellite broadcasting service, MPEG 2 (related with the error correction approach outside of a standardization) is used, and the procedure of the coding method of an error correction is as follows (Fujiwara ** editorial supervision: a practice MPEG textbook, ASCII).

[0005] (1) Make a synchronization easy to add a synchronous packet for every fixed-length data packet, to give a synchronous cutting tool periodicity every eight packets (synchronous reversal), and to take.

[0006] (2) When the same pattern as a synchronizing signal appears continuously in data division, prevent disturbing a synchronization, average frequency spectrum and make it distribute by performing energy dispersal (1 and 0 pattern should incline and should be distributed that there is nothing).

[0007] (3) An error correction (outside sign) uses Lead Solomon (RS).

(4) In order to heighten Lead Solomon's (RS) error correction capacity, diffuse an error in an interleave.

[0008] (5) Use convolutional code-ization for inner digital-error correction (the Viterbi decode is used for decode).

[0009] Thus, the error of the letter of a burst which was not able to be corrected by the convolutional code is efficiently corrected with RS sign which is an burst error correction sign. In the terminal and personal digital assistant which were realized by software mounting, it becomes a remarkable burden to a terminal for processing of an error correction. It is desirable that error detection and a correction method can be changed in consideration of this point according to informational classes (a part for a part for the difference in media and a header unit and data division etc.) and significance.

[0010] A packet is discarded, when transmission in a packet unit is performed and, as for the Internet, an error is detected by the packet (in the case of the Internet, called IP (Internet Protocol: Internet Protocol) packet).

[0011] Transmission-line error of an IP packet like Ethernet is small, it is assumed and designed, a comparatively high-speed transmission line is hurt, and only easy error detection is introduced (weak [as opposed to / in a wireless environment / a transmission-line error] for this reason).

[0012] Moreover, also when a transmission line carries out congestion (confusion), a packet is discarded at a junction terminal. The method which stores and transmits the coded data from which a coding method and a time

stump differ voice data to the same packet as a method which raises resistance to packet loss and raises the transmission quality is proposed (RTP (RealtimeTransport Protocol) payload for redundant voice data (data format) : ("RTP Payload for Redundant Audio Data", RFC2198, Internet Engineering Task Force)).

[0013] As a trouble, a point inapplicable to an image and the point that important information cannot be alternatively transmitted repeatedly as required are got. Furthermore, the method which transmits the result of an operation between packets as a transmission packet is proposed (RTP payload format for forward error correction (An RTP Payload Format for Generic Forward ErrorCorrection, Internet Draft, Internet Engineering Task Force)).

[0014] The point that similarly information important as a trouble cannot be alternatively transmitted repeatedly as required is got.

[0015] The method with which H.223 (multiplexing protocol for the multimedia communication of a low bit rate : (Multiplexing Protocol ForLow Bitrate Multimedia Communication, Telecommunication StandardizationSector of ITU)) is raised, and changes error resistance as a transmission protocol in consideration of mobile communications according to the classes (an image,

voice, etc.) of media to transmit is proposed.

[0016] Especially, in H.223 Annex B, the header information of a former transmission packet is copied and the method transmitted as an option header of the header of the newly transmitted transmission packet is proposed in order to raise the error resistance over the header of a transmission packet. A part for a header unit is protected by copying and transmitting a part for a header unit. Error resistance is strengthened with error detection, an error correcting code (the error detection by CRC (Cyclic Redundancy Check), error correction by the convolutional code), and the method using resending about the part of data (H.223 Annex C).

[0017] Furthermore, the method which performs different error correcting code-ization according to the significance and the priority of data is proposed (communication device list receiving set used for error correcting code-ized equipment, error correction decode equipment and communication system (JP,9-116440,A), a digital signal transmission system, and it (JP,7-336400,A)).

[0018] By this method, the data which process an error correcting code can be controlled to the need minimum, and can reduce throughput from the conventional method. However, they are that the grain size (a frame unit, a GOB

unit, etc.) to the data which match a priority is unknown, or a bit stream unit. [as opposed to / For example, / an image] Moreover, since it is a method using error detection or an error correcting code, a problem is in the load for processing of the error detection in a terminal, and a correction sign, and the time delay concerning processing.

[0019] In ATM (asynchronous transmission mode), in case the cel packet of ATM is resent, the method which carries out multiple-times transmission of the copy of the packet set as the object of a resending demand is proposed. It is possible to raise dependability by carrying out multiple-times transmission of the same resending demand (the resending control system for MPEG 2 image transmission in the Ito sincerity and an ATM network, the Institute of Electronics, Information and Communication Engineers **** technique IN 97-67). Since all cel packets are resent to a resending demand, if a resending demand grows, increase of a transmission packet will serve as a technical problem.

[0020] Since only argument what kind of cure to take against packet loss to error resistance can be performed when premised on use of the existing Internet Protocol, fundamental solution is difficult. The method which strengthens error resistance to the IP (Internet Protocol: Internet Protocol) itself is proposed to it

(application of RS sign and an interleave), and strengthening of the error resistance over data transmission is attained (application of large-scale multicast architecture without an error, and a forward-error-correction technique, the Institute of Electronics, Information and Communication Engineers **** technique SSE 97-130).

[0021] However, like an image, since the powerful error correction is unnecessary, it is carrying out error resistance according to the class of media transmitted by the IP packet depending on media, and the load of the terminal generated for error detection or an error correction and delay can be controlled.

[0022]

[Problem(s) to be Solved by the Invention] In the Prior art, according to the classes (an image, voice, text, etc.) of data transmitted like H.223, the coding method of an error correcting code was changed, and it was resending. However, although error detection and correction capacity are strengthened by strengthening error detection and a correction sign, the processing time starts. Moreover, when resending, in the communication link situation that a propagation delay is large, delay by resending cannot be disregarded like wireless. On the other hand, as a method which does not use resending, error

detection, and a correction sign, encode voice data by different coding method from the former, and duplication transmission is carried out, or the method which repeats and transmits the copy for a header unit of a packet, the method which repeats and transmits the packet to resend have been proposed. However, since alternative duplication transmission was omitted, in transmission for an image or voice, the overlapping amount of transmissions cannot be disregarded.

[0023] By 1st invention, it solves by transmitting [packet-size storing or data, repeat and] and recording to this technical problem repeatedly to a packet which is alternatively different according to the frame type of a priority and an image, a coding method, etc. in the same data.

[0024] That is, data with a high significance are chosen using the priority for every encoded bit stream, and the priority for every frame which constitutes a bit stream, and the resistance over packet loss or a data error can be strengthened with shifting time amount, and transmitting and recording it repeatedly, without increasing the amount of transmissions vainly. This method may be applied not only to the data packet which newly transmits but to the data packet to resend.

[0025] Moreover, by the Internet, a transmission packet's detection of an error discards the transmission packet conventionally. Although error resistance was

strengthened with using new error detection and a correction sign method to a transmission packet, transmission formats, such as a transmission header, were changed and it was not taken into consideration about this point in a Prior art.

[0026] In the 2nd invention, to the information included in a transmission packet, the operation of error detection or a correction sign is performed, a new transmission header is added at the head of a transmission packet, and it transmits in accordance with the result of an operation of error detection or a correction sign.

[0027] It becomes unnecessary to give superfluous error resistance by changing the operation approach of error detection or an error correcting code according to the information on the classification of the data contained in a transmission packet.

[0028] Moreover, since it corresponds to various error detection and corrections, the error resistance of Internet Protocol is diversified by enabling it the identification information showing the function to perform an error correction to a transmission packet being added, and to identify the class by the transmission header.

[0029] By the Internet, if an error is detected using an easy checksum by the

UDP (User Datagram Protocol) packet, specifically, the UDP packet will be discarded. Although information is transmitted by the IP packet, two, UDP (discarded if an error is in a packet as mentioned above), and TCP (Transmission Control Protocol: generating of packet loss performs resending processing), are used for the data transmitted from the point of dependability over transmission (in case it is transmission, the header of UDP or TCP and actual data continue in order after IP header).

[0030] Since it becomes a different transmission format (format), it becomes impossible to interpret the IP packet used by the Internet like satellite broadcasting service and H.223, as the IP packet for which the transmission header is used from the former, although the error correction capacity of an IP packet can be strengthened by technique, such as FEC (forward error correction: Forward Error Correction) and an interleave.

[0031] Then, the IP (Internet Protocol) itself is encapsulated according to the class of data to transmit (an IP packet is treated as data and a communication link header is newly added at the head of an IP packet), error correcting code-ization is performed or the error resistance of Internet Protocol is strengthened with enabling it the identification information showing the function

to perform an error correction to an IP packet being added, and to identify the class by IP header.

[0032] In addition, a method which is different to a part for a communication link header (each header of IP, UDP, and TCP) and data division, respectively in error detection and the processing about correction may be used, and it is not necessary to use error detection and correction.

[0033] The method which performs different error correcting code-ization according to the significance and the priority of data is proposed.

[0034] Thereby, the data which process an error correcting code can be controlled to the need minimum, and can reduce throughput from the conventional method. However, they are that the grain size (a frame unit, a GOB unit, etc.) to the data which match a priority is unknown, or a bit stream unit. [as opposed to / For example, / an image]

[0035] Then, according to the priority to which it was made to correspond for every frame of an image, by changing the method of error detection or an error correction, applicability of a priority is clarified and grain size of applicability can be made fine.

[0036] This invention can be used in the transmission line for which error

resistance, such as wireless LAN, a cellular phone, satellite communication, satellite broadcasting service, and xDSL (high-speed transmission line using the telephone line), CATV (cable television: cable TV), is needed, and may include not only the terminal of transmission and reception but repeating installation.

[0037]

[Means for Solving the Problem] This invention repeats matching, said one or more data partitions with a low priority, and said same data partition with a high priority for the priority showing the sequence of processing in the data partition of time series data, once or more, makes a packet storing or said data partition with a high priority at the same packet, and is repeatedly characterized by transmission and the thing to record once or more.

[0038] Or in case the operation of error detection or a correction sign is performed at least, 0 bytes or more or 1 bytes or more of new transmission header is added to the head of said transmission packet to the information included in a transmission packet and it transmits in accordance with the result of an operation of error detection or a correction sign at least, it is characterized by to change the operation approach of error detection or a correction sign at least according to the classification of the data contained in said transmission

packet before an operation.

[0039]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 is drawing showing transmission or the record format which a data processor outputs.

[0040] From drawing 1 , encode voice data by different coding method as an error resistance method which does not use resending, error detection, and a correction sign, and duplication transmission is carried out, or the method which repeats and transmits the copy for a header unit of a packet, the method which repeats and transmits a resending demand have been proposed.

[0041] However, since alternative duplication transmission was omitted, in transmission for an image or voice, the overlapping amount of transmissions cannot be disregarded. By this invention, it solves by transmitting [packet-ize storing or data, repeat and] and recording to this technical problem repeatedly to a packet which is alternatively different according to the frame type of a priority and an image, a coding method, etc. in the same data.

[0042] By this invention, the resistance over packet loss or a data error is strengthened with shifting time amount, and transmitting and recording a packet

with a high significance repeatedly.

[0043] In the example of drawing 1 (A), the significance of a data partition (a) is high and it stores in the same packet with each of a data partition (b), (c), and (d).

[0044] In addition, the priority which shows the sequence of processing that the user defined significance beforehand for example, the priority (data stream of time series data) for every encoded bit stream -- The priority of every [which constitutes a bit stream] frame (data partition of time series data), A frame type (coding in a frame, interframe coding), a coding header and coded data, You may be an identifier (for example, synchronous transmitting former identifier:SSRC;synchronization source identifier defined by RTP) for identifying a coding method and the bit stream to transmit, and the amount of transaction datas.

[0045] Moreover, as a unit of a data partition, as long as it is the frame unit of an image or voice, and an image, you may be a GOB unit and MB unit. As long as it is voice, you may be the owner sound section and the silent section.

[0046] In addition, a data partition (a) is packet-ized, may be repeated independently, and may be transmitted and recorded. Moreover, the same data partition may be repeated and stored in the same packet like drawing 1 (B).

[0047] Drawing 1 (C) has described SN (serial number) of the packet repeatedly transmitted to the communication link header of the packet transmitted before transmitting the data partition by which repeat transmission is carried out, and the count transmitted repeatedly, in order to notify to a receiving side how many times repeat transmission of the data partition transmitted repeatedly is carried out.

[0048] This information may be repeatedly described to some transmitting packets (you may be a flag for notifying whether the same data are sent repeatedly).

[0049] In addition, such information may be transmitted with a control protocol independently of transmission of data, as drawing 1 (D) showed.

[0050] By the expression approach of the example of drawing 1 (D), it is shown how many times repeat transmission of a data partition is performed to information, such as a priority. In the example, the count repeatedly transmitted to the data partition of "priority 2" is set to 3. Thereby, maintenance of a data partition and management of abandonment become easy by the receiving side.

[0051] As shown in drawing 1 (E), in case two or more data partitions are stored in the same packet, the contents judging of the data partition stored by

describing and recording [transmit and] the information about either on the priority of the data partition stored, a frame type, and data classification on the head part of a packet at least can be accelerated.

[0052] Drawing 2 is drawing explaining the error resistance by the operation between packets. The priority which expresses with the data partition of data the sequence of processing is calculated between two or more data partitions according to matching and a priority (exclusive OR), and restoration processing of an important packet can be performed by transmitting the result of an operation. If one of two of the packet the result of an operation was described to be, and a transmission packet is receivable, another lost packet can be restored. Since a priority is made to reflect, alternative processing is attained compared with the conventional invention, and superfluous transmission can be controlled.

[0053] Drawing 3 is drawing showing the error resistance of Internet Protocol. In the Internet, a transmission packet's detection of an error discards the transmission packet. Although error resistance is strengthened with using a correction method in new error detection or a correction sign method to a transmission packet, modification of transmission formats, such as a transmission header, is newly needed. In a Prior art, it was not taken into

consideration about this point.

[0054] Then, to the information included in a transmission packet, the operation of error detection or a correction sign is performed, a new transmission header is added at the head of a transmission packet, and it transmits in accordance with the result of an operation of error detection or a correction sign.

[0055] It becomes unnecessary to give superfluous error resistance by changing the operation approach of error detection or an error correcting code according to the information on the classification of the data contained in a transmission packet.

[0056] Moreover, since it corresponds to various error detection and a correction method, the error resistance of Internet Protocol is diversified by enabling it the identification information showing the function to perform an error correction to a transmission packet being added, and to identify the class by the transmission header.

[0057] In drawing 3 (A), the error correcting code to an IP packet is calculated. A transmission header is added to the head of an IP packet (if it is only a point-to-point, only a serial number). Even if it performs the checksum and error correction of an easy transmission header, in case it transmits in accordance

with the good result of an operation of an error correcting code It responds to the classification of the data contained in an IP packet. The approach of error detection The operation approach of an error correcting code (For example, parity, CRC, etc.) the class (an image --) of data transmitted by (for example, changing BCH, Lead Solomon, convolutional-code-izing, the Viterbi decryption, etc.) The error resistance over the Internet Protocol according to the part (a header, payload) of transmission packets, such as voice and a text, becomes possible (the identifier and flag which describe the method and existence of the error resistance used for the communication link header may be formed, or the protocol between terminals may notify).

[0058] In addition, according to the data classification to transmit, the error resistance of PPP may be strengthened using the transmission framework (refer to appendix (a)) of PPP (Point-to-Point Protocol).

[0059] Moreover, what is necessary is just to judge the judgment of data classification by the existence or data classification (for it to identify by the payload type, if it is RTP) of the transmission header (refer to appendix (b)) of RTP in an IP packet (Realtime Transport Protocol), or the transmission header (transmission protocols other than the thing which the user defined uniquely, or

RTP) defined beforehand.

[0060] Moreover, although it is expectable to strengthen the error detection and correction capacity of IP for the IP packet used by the Internet by technique, such as FEC, like satellite broadcasting service and H.223, it becomes an essentially different format from IP.

[0061] Then, it becomes possible to give error resistance to IP because extend IP header or (management possible : refer to appendix at IPv6 because it registers as an extended header (c)) drawing 3 (B) newly defines the protocol type (IP datagram: refer to appendix (d)) of IP.

[0062] As shown in drawing 3 (C), in H.223, about error detection or the approach of correction, a part for a header unit and the payload part were distinguished, and the technique of different error detection and correction is introduced.

[0063] The technique of the part (a header unit (IP, UDP, TCP), data transmitted (good also as data transmitted in UDP and TCP)) of the target information, different error detection for every media, and an error correction may be introduced also about the error correction to an IP packet.

[0064] In addition, the transparent communication link with the communication

environment which does not use IP is attained by transmitting an H.223 transmission packet as transmission data of an IP packet. It is necessary to newly define H.223 as the protocol type of IP like the point.

[0065] In addition, by matching and managing an IP address, the telephone number, and the port number of the Internet, it becomes manageable [correspondence-related / between terminals] and interconnect with the Internet and H.223 is attained.

[0066] The method which finally performs different error correcting code-ization according to the significance and the priority of data is proposed. Thereby, the data which process an error correcting code can be controlled to the need minimum, and can reduce throughput from the conventional method.

[0067] However, they are that the grain size (a frame unit, a GOB unit, etc.) to the data which match a priority is unknown, or a bit stream unit. [as opposed to / For example, / an image]

[0068] Then, according to the priority to which it was made to correspond for every frame of an image, by changing the method of error detection or an error correction, applicability of a priority is clarified and grain size of applicability can be made fine.

[0069]

[Effect of the Invention] According to this invention, the error resistance of transmission and record of an image or voice can be raised as mentioned above.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] (A) Drawing showing transmission or the record format which the data processor in the gestalt of operation of - (E) this invention outputs

[Drawing 2] Drawing showing the error resistance by the operation between these packets

[Drawing 3] (A) Drawing showing the error resistance of the -(C) said Internet Protocol